

may optionally be present.

which components produce a clear stable micro-emulsion and have improved combustion. That is, these fuel-additive combinations are cleaner burning, provide more energy and fewer pollutants than diesel fuel without the claimed additive.

No new matter has been added to the application.

The following positions of the Examiner are found in the Examiners amendment dated May 30, 2000. Applicant's responses are to those earlier positions and are expected to overcome those positions.

RESTRICTION COMMENTS

"Applicant's election of Group I, claims 1-28, in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a))."

Applicant reserves the right to refile applications to obtain claim coverage comparable to the originally filed specification claims and figures. Applicant's amendments and limitations in this application are not to be construed to be a waiver or estoppel in anyway.

EXAMINER'S COMMENTS

Claim 29 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to a non-elected invention.

RESPONSE: Claim 29 is now cancelled without prejudice or disclaimer.

The abstract of the disclosure is objected to because the abstract exceeds 250 words. Correction is required. See MPEP § 608.01(b).

RESPONSE: Applicant includes herein a revised abstract.

Therefore this objection is overcome.

The incorporation of essential material in the specification by reference to "[a] patents, patent applications, articles, references, standards, etc. cited herein" (page 7, lines 12 and 13) is improper because only U.S. Patents and allowed U.S. Applications may be incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or a practitioner representing the applicant, stating that the amendatory material consists of the same material incorporated by reference in the referencing application. See *In re Hawkins*, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ

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163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973).

RESPONSE: Applicants has amended this text as shown above to reflect the M.P.E.P.

Therefore, this objection is overcome.

REJECTION OF PENDING CLAIMS 59 -78 (PRIOR CLAIMS 1 AND 30-58) UNDER 35
USC 112 FIRST PARAGRAPH

Claims 1 and 30-58 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The Examiner states that:

“Applicant has not pointed to where the disclosure there is support for the amended claims.”

Applicant now provides below the support for the changes to the now pending above amended claims.

More specific support for the submitted claims is planned to be timely filed provided about January 2, 2001:

Reconsideration and withdrawal of this rejection is respectfully requested.

REJECTION OF CLAIMS 1 and New 59-77 (Old 30-58) UNDER 35 U.S.C. 112

Claims 1 and new 59 to 77 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner states that:

“Claims 1, 30-58 (now 59 to 77) are replete with indefinite and/or incorrect terms. Accordingly, it is impossible to determine just what is being claimed.

Claim 1, and claims dependent thereon, are rendered indefinite by the recitation of Markush groups containing terms (a)(ii), (b)(ii) and (b)(iii) which, apparently, are only “optionally” recited. Normal Markush group practice means that any of the recited elements within the group may be selected, i.e., (a)(i), (a)(ii) or (a)(iii). Yet element (a)(ii) is apparently only “optionally” present. Thus it is unclear if the composition must contain at least component (a)(i) or, if, as normal Markush practice would allow, element (a)(ii) may be selected; (a)(ii) being “optional” (i.e., not being presented). In component

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“c”, the recitation “wherein trialkylamines are excluded” is not understood. That limitation is recited within the Markush group of component “c”. It is unclear how the recitation “having a viscosity similar to that of the liquid combustible fuel” modifies, or is intended to modify, the recitation “where the ratio of combustible fuel:additive ranges from about 50:50 to 99:1 by volume”. Especially considering that claim 1 does not contain “combustible fuel”. The term “having a viscosity similar to that of the original viscosity of the fuel” is subjective and indefinite. Additionally, defining the additive composition by reference to a micro emulsion which excludes certain components renders the claims indefinite. The recitation “R₄ is alkylphenyl of 1 to 18 carbon atoms in the optionally branched alkyl chain or H” is indefinite. Claim 1 is rendered indefinite by the recitation that the composition excludes “aromatic organic compounds” and also excludes “compounds of phenanthrene”, i.e., phenanthrene is an aromatic organic compound. The recitation “and other organic diacids” on page 4, line 2 of the amendment, is indefinite, i.e., fails to particularly point out and distinctly claim which “other diacids” are intended. The recitation of the proviso that “when the additives for diesel fuel are anhydrous, component (c) is optional” renders the claims indefinite, i.e., claim 1 recites “one or more of the following components selected from (b), (c) or combinations of (b) and (c)”. Thus it is unclear if component (c) is an optional component or, is a required component when the additives are not anhydrous and for diesel fuel.

Claims 32, 38 and 44 fail to further limit the additive composition.

Applicant’s arguments filed March 20, 2000 have been fully considered but they are not persuasive.”

Applicant respectfully traverses this rejection.

Applicant has now cancelled without prejudice or disclaimer pending Claims 2 to 58 and have amended the new claims 59 to 77 extensively which Applicant argues overcomes this rejection.

The claims now focus on diesel fuel. The primary small alcohol is ethanol. Methanol in large quantities is excluded. Trace amounts of methanol can be present. The art does not teach or suggest ethanol, plus additional larger alcohol and fatty acid as is claimed herein.

Applicant had earlier replaced all claims with the claims amended from the PCT Chapter II under Article 34 in the PCT Written Opinion. (copy enclosed)

Those claims were similar to those now pending in the corresponding PCT application PCT/US99/00598.

The support for these amended and newly presented claims is found throughout the specification claims and figures as filed. Also see below.

No new matter has been added to this application.

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Therefore, Applicant argues that this rejection has been overcome.
Reconsideration and withdrawal is respectfully requested.

DECLARATION OF INVENTOR DEBORAH WENZEL

A declaration under 37 C.F. R. 1.132 of inventor Deborah Wenzel was forwarded earlier.
Please enter it into the record.

It discusses the surprising results of improved efficiency improved combustion and reduced emissions when the microemulsion composition of this invention is used compared to the conventional diesel fuel.

This declaration was not submitted earlier because Applicant believed that the prior response, similar to that found in the PCT application would have been sufficient and that the claims would be allowed. Applicant requests that this Declaration of Deborah Wenzel be entered and made part of the record.

DISCUSSION OF THE ART CITED IN THE EQUIVALENT PCT APPLICATION

The art cited in the equivalent PCT application is of record in this application. The references are discussed below:

The reference cited in the equivalent PCT application PCT/US/00598 is Schon et al., USP 5,004,479.

The Itow et al. reference is cited in the equivalent PCT application as USP 4,527,995.
The first and most apparent problems for both the Schon et al. and Itow patents are that they pertain specifically and only to the introduction of methanol as the water-soluble portion of the additive which is introduced into various fossil fuels using surfactant combinations.

The exclusive use of methanol as the only water-soluble alcohol renders either patent, or any combination of both inventions, unusable as a practical fuel additive in existing engines and or existing fuel systems.

The reason is that methanol is approximately ten times more aggressive as a solvent than ethanol. It will dissolve sensitive fuel system parts (especially fuel injection nozzles, gaskets, O-rings, and any other part that may contain rubber) and will eventually cause damage to the engine itself through pitting of the piston, or piston chamber, or both.

Even in the present invention which utilizes ethanol, optionally with a trace amount of

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methanol as a possible additional component, it is extremely important that the methanol content be strictly limited to about 5% or less of the total additive composition, specifically because of its aggressive solvent nature.

The second most obvious problem for the Schon et al. and Itow et al. inventions (especially as it relates to diesel and other distillates) is that, in addition to the exclusion of ethanol (C2), the surfactant combinations for either Schon et al., or Schon et al. and Itow however combined, do not include alcohols ranging from C3 through C5 or C6 through C8. These particular alcohols are critical for producing balanced formulations in which higher alcohols (C12-C16) will not crystallize and will not evaporate as with the lower alcohol C1 in the case of Schon et al./Itow.

An additive formulation using only methanol and neutralized fatty acids will quickly dissolve engine parts, produce highly combustible methanol vapors, and leave a sticky residue.

An additive formulation using only methanol and C10-C16 will also dissolve engine parts, produce methanol vapors, and separate at low temperatures as the methanol absorbs ambient water which condenses.

An additive formulation that combines methanol, C10-16, and neutralized fatty acids, would reduce residue to the degree that C10-16 alcohols replaced fatty acids. Stability is improved to the degree that an appropriate proportion of neutralized fatty acids are utilized. However, the formulations of this cited art would still dissolve engine parts and produce unacceptable methanol vapors.

The Wenzel et al. reference is cited in the equivalent PCT application as US Patent 4,083,698.

The first and most apparent problem concerning the Wenzel et al. patent especially as it relates to diesel fuel/other distillate fuels is its lack of lower alcohols C4-C5, and especially its lack of middle alcohols C6-12.

Without the presence of these alcohols, especially the C8 alcohols, the invention relies entirely on ethoxylated alcohols and neutralized fatty acids for its surfactant portion, necessitating a high concentration of both in order to produce a stable total fuel composition.

A fuel composition with too high a concentration of neutralized fatty acids leaves an unacceptable residue in fuel system and internal engine parts.

A fuel composition with too high a concentration of ethoxylated alcohols will adversely

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affect combustion because ethylene oxides do not burn well. A high enough concentration of ethylene oxide actually increases exhaust smoke, which conflicts directly with the objective of the invention to reduce pollution.

Also, both neutralized fatty acids and ethoxylated alcohols are extremely viscous compared to the viscosity of fossil fuels. Too high a concentration of either or both will adversely affect the viscosity of the total additive composition, which must match as nearly as possible the viscosity of the original fuel in order to be useful in existing fuel systems and engines.

The presence of lower alcohols (C4-5) and middle alcohols (C6-12) and most especially middle alcohols (the C8 alcohols) in the present invention make it possible to greatly reduce the proportion of neutralized fatty acids needed to produce a stable fuel composition and to even further reduce or eliminate the need for ethoxylated alcohols.

The second problem of the Wenzel et al. patent is its specified range of ethoxylated alcohols as having between 5 and 20 moles ethylene oxide. Besides the high quantity of ethoxylated alcohols required, the dense quality of the ethoxylates specified further guarantees a total additive composition that will not produce optimum combustion and is too viscous for optimum use in existing fuel systems and engines.

A third problem of the Wenzel et al. patent is its lack of higher (C13-18) non-ethoxylated alcohols, which are important optional components in the present invention for regulating or enhancing cetane (combustibility) level of the total fuel composition in certain use applications.

It is also important, as outlined in the present invention, that very low levels of ethylene oxide (3 EO moles (units) or less) are optionally available for the purpose of enhancing stability and for reducing or eliminating the possibility of crystallization of the higher alcohols.

Finally, without the inclusion of middle (C6-12) alcohols, which have been shown to greatly reduce evaporation levels of lower alcohols (C1-2), while ethoxylated alcohols and neutralized fatty acids did not reduce evaporation levels, a defect of the Wenzel et al patent is that additive compositions of this invention will produce unacceptable levels of methanol/ethanol vapors.

SUMMARY

Based on the above arguments and amendments, Applicant argue that these claims are

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now of a form and allowance. A prompt notification thereof is respectfully requested.

Alternatively, Applicant requests that this amendment be entered into the record for purpose of appeal.

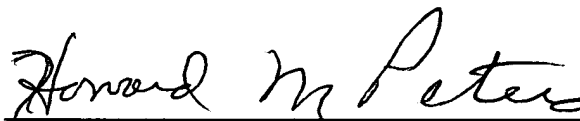
Alternatively, Applicant is surprised that no part has been cited by the Examiner and that no 1449 form have been initialized by the Examiner.

If the Examiner has any questions, please call the undersigned at 650-324-1677 x 20 as soon as possible.

The Examiner is authorized to charge or credit PTO Deposit Account No. 16-1331 for any needed expense in the filing of this response.

Respectfully submitted,

Date: December 15, 2000



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Enclosures:

Petition for Extension of Time and Fee

PCT Int. Prel. Exam. Report and Claims

PCT Written Opinion

Use Declaration of Deborah Wenzel Mailed Earlier and in the file

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